Piping Plover Utilization of the Mason Inlet Area (NC) Before, During, and After the Relocation Project of 2002

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INTRODUCTION

PRE-PROJECT (2001) SURVEY RESULTS

22 observations of Piping Plovers on Figure Eight Island in Fall 2001 before the Mason Inlet Relocation Project surveys began

- 15 observations at Rich Inlet and 7 at Mason Inlet
- All observations were of autumnal migrants and over-wintering birds
- 2 banded PIPL observed repeatedly at Mason Inlet in fall 2001

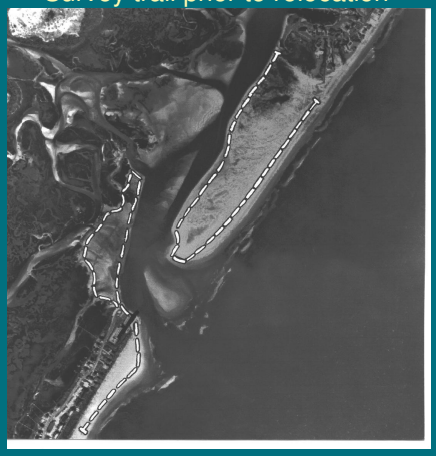
MONITORING PROTOCOLS

In late November 2001, personnel at UNCW began monitoring PIPL at three inlets in southeastern North Carolina as a condition of Mason Inlet Relocation Project

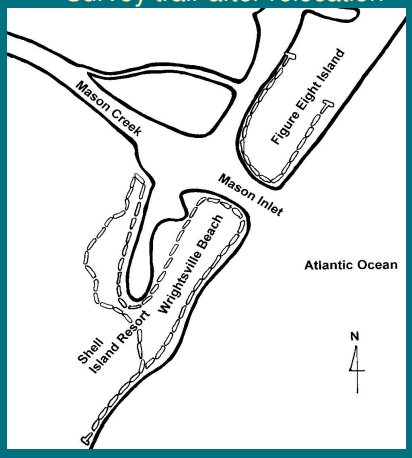
- Rich Inlet, separating Hutaff Island and Figure Eight Island, is the northernmost inlet surveyed
- Mason Inlet, separating Figure Eight Island and Wrightsville Beach, was mechanically moved 3000 ft north of its previous location in early 2002
- Masonboro Inlet, separating Wrightsville Beach and Masonboro Island, is the southernmost inlet surveyed

Bird monitoring followed a set path along the outer perimeter of each inlet area, alternating directions and at various time (tidal regimes) of the day

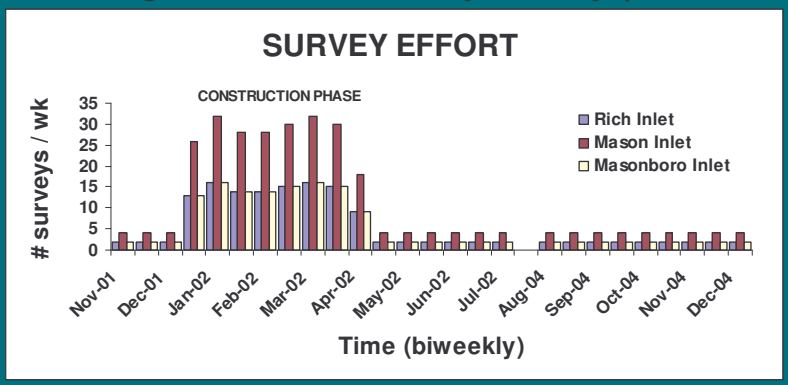
Survey trail prior to relocation



Survey trail after relocation

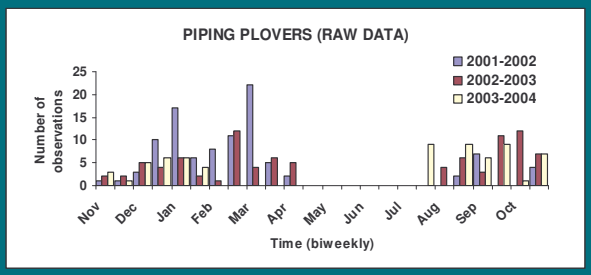


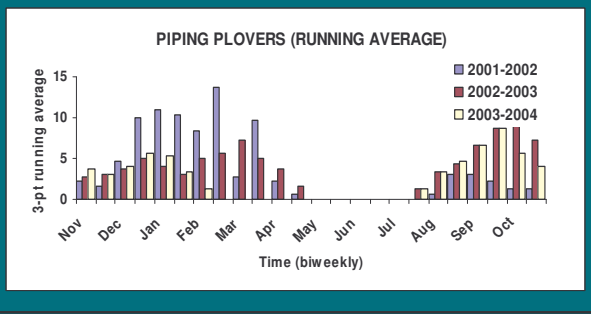
Daily surveys during the construction phase (January – April 2002) and weekly surveys during remainder of 3-yr study period



- Data standardized by effort to permit comparisons over time
- 3-point running averages used to examine trends over time

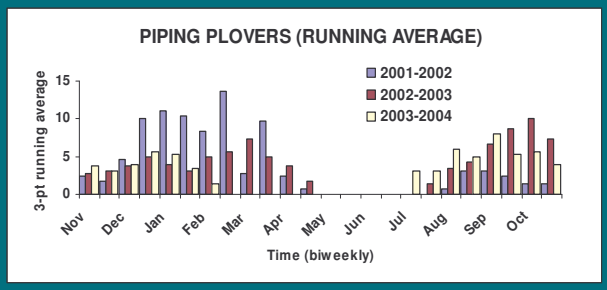
SMOOTHING EFFECT OF 3-PT RUNNING AVERAGES

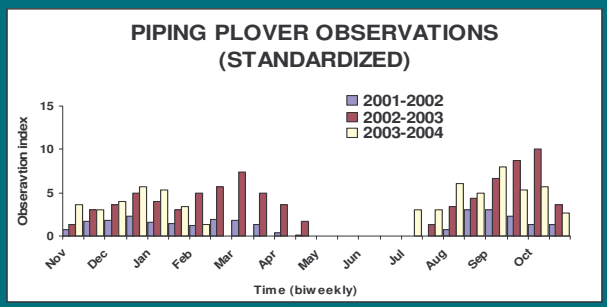




Most PIPL observations were recorded around low tide and on foraging grounds, regardless of the time of day or weather

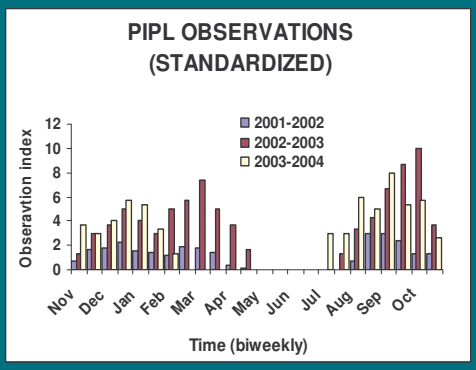
REMOVING THE EFFECT OF UNEQUAL EFFORT





- 7X survey effort at all inlets during the construction phase (January-April 2002)
- Mason Inlet surveyed 2X as much as Rich and Masonboro inlets
- OBSERVATION INDEX = average number of PIPL observed each survey

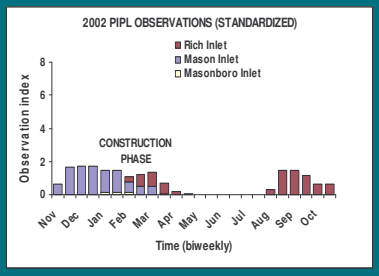
RESULTS BY YEAR

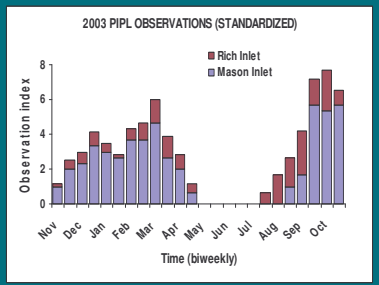


- 2-3X more observations in 2003 & 2004 than in 2002
- No observations during late spring and early summer in all three years
- Fall migration typically peaks in September and spring migration typically peaks in March, but timing varied among years
- Repeated observations of winter residents evident in all three years

RESULTS BY INLET

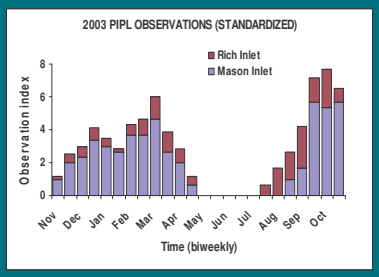
- In spring 2002, observations shifted from Mason Inlet to Rich Inlet as relocation project continued (few migrants)
- In fall 2002, all observations occurred at Rich Inlet (aversion to Mason Inlet)
- Observations at Mason Inlet began again in late 2002 as winter residents returned
- In 2003, PIPL observation patterns were similar at Mason and Rich inlets

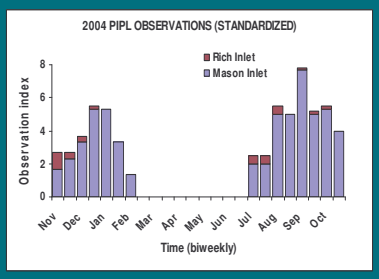




RESULTS BY INLET (cont)

- By 2003, Mason Inlet had become an important foraging and resting site for migrating and over-wintering PIPL
- Rich Inlet continued to be used in 2003, to the same extent as it was used in 2002
- In 2004, use of Mason Inlet by migrating and over-wintering PIPL continued to increase
- In 2004, use of Rich Inlet by migrating and over-wintering PIPL declined





WHY?

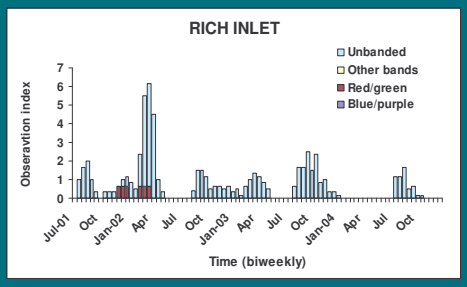
Nov 2003

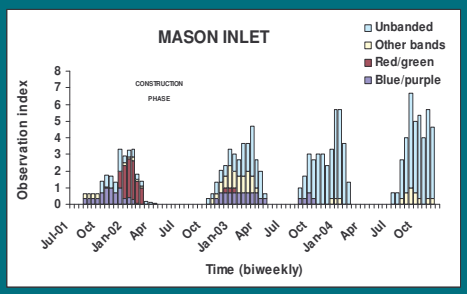
Nov 2004

- Sediment basin filled in at Mason Inlet, forming a tidal mudflat that is exposed at low tide; foraging habitat is now adjacent to resting/loafing habitat
- Rich Inlet became scoured (steeper) in 2004 as its channel shifted; exposed mudflats obliterated

BANDED PIPING PLOVERS

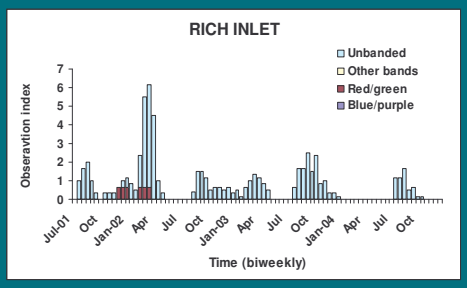
- Data standardized as before
- Two banded PIPL have over-wintered in the Mason Inlet area
  - **Blue/purple (L) during the 2001-2002, 2002-2003, and 2003-2004 winters**
  - **Red/green (L) during the 2001-2002 and 2002-2003 winters**
- Majority of PIPL are unbanded, especially during spring and fall migration

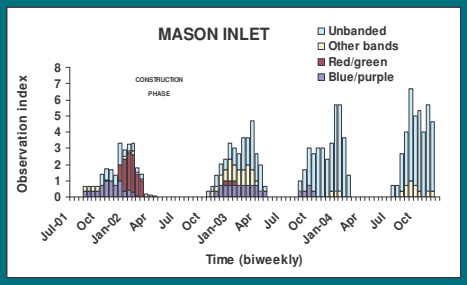




BANDED PIPING PLOVERS (cont)

- Pronounced spike in PIPL observations of spring migrants at Rich Inlet during the construction phase
- Steady decline in PIPL observations at Rich Inlet from 2002 to 2004
- Steady increase in PIPL observations at Mason Inlet from 2002 to 2004





CONCLUSIONS

- Mason Inlet and Rich Inlet are important areas for migrating and over-wintering Piping Plovers—sometimes the same Piping Plovers from year to year
- Masonboro Inlet is not an important area for migrating and over-wintering Piping Plovers due to human disturbance and shoreline stabilization devices
- The construction phase of the relocation project began when winter residents were in the region and ended at the end of spring migration

CONCLUSIONS (cont)

- Spring migrants (but not winter residents) in the Mason Inlet area were disrupted by the construction phase of the relocation project, but these birds apparently continued on to Rich Inlet before stopping to rest and forage
- Migrants appeared to have an aversion to the Mason Inlet area the following autumn (four months later), but numbers then returned to pre-construction levels by the beginning of winter (eight months later)

CONCLUSIONS (cont)

- The importance of Mason Inlet for migrating and over-wintering PIPL appears to be increasing, while the importance of Rich Inlet appears to be waning
- Inshore sediment basins that are adjacent to barrier island uplands provide the habitat heterogeneity required by foraging, socializing, and resting/loafing PIPL
- Maintenance of inshore sediment basins or the continued rotation of several sediment basins will be necessary to provide ample habitat for migrating and over-wintering PIPL

ACKNOWLEDGMENTS

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